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PRACTICAL

OBSERVATIONS

Tho: Howell. 1828.

ON

THE MEDICAL POWERS OF THE MOST CELEBRATED

MINERAL WATERS.

AND

OF THE VARIOUS MODES OF BATHING.

INTENDED

FOR THE USE OF INVALIDS.

BY

PATRICK MACKENZIE, M. D.

LICENTIATE OF THE ROYAL COLLEGE OF PHYSICIANS, LONDON; AND ASSISTANT PHYSICIAN TO THE FEVER INSTITUTION, &c.

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INTRODUCTION.

THE fashion which now obtains of paying annual visits to watering-places for the purpose of preserving health, or of recovering it, when impaired, by the use of some favourite fountain, or bath; and the frequent occasions which I have had of observing the injurious effects of the abuse of Mineral Waters, and of the various modes of bathing, have induced me to collect the opinions of the best writers on these subjects—to arrange them with my own observations, and thus, as it were, to concentrate the scattered lights of knowledge to direct the invalid in search of the lost treasure.

In this attempt I have divided Mineral Waters according to their medical operations, and I have avoided all scrupulous chemical enquiries, and theoretical discussions, as incompatible with my object, confining myself to a plain statement of medical facts only, the work being intended for the valetudinarian, and not for the critical eye of general science, nor of the medical profession. For the same reason I have endeavoured to divest my language of all technical phraseology, and to compress, as much as possible, the subject, that I may be understood without fatigue to the attention. Should the result be successful, I shall not repent of my labours.

VIGO LANE.

April 1*st*, 1819.

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ERRATUM.

Page 68, line 6, *for* this respect, *read* medical Powers.

OBSERVATIONS

ON

MINERAL WATERS.

All waters which are impregnated with foreign matter, so as to be capable of exerting specific chemical actions, or of producing changes in the living system, are denominated mineral; in consequence of their agents being usually substances derived from the mineral kingdom.

They are found of various temperatures in different parts of the earth, constituting wells, springs, and fountains.

Our first knowledge of them was the result of accident. Mankind, attracted by their mysterious powers, soon distinguished them from common water; but it was not until the latter end of the 17th century that any attempt was made to ascertain their composition, and to discover the sources of their medicinal virtues.

Since that period much has been done by the labours of chemists; and, within these few years, many important facts have been gained, which have shed considerable light on the properties of mineral waters.

Their foreign contents are not very numerous. They do not exceed forty. They associate in various proportions and combinations, but never more than eight or ten together in the same spring; each of which, considered separately, is of little value; but, taken collectively, is of im-

portance in the cure of diseases. They are comprised in the following enumeration: air, and its component parts; oxygen and azotic gas; acids, alkalies, earths, and salts.*

Water, the only principle common among mineral wells, is the most valuable of all their properties, and is the source of the efficacy of many springs containing but insignificant portions of foreign impregnations; for, besides the effect of the aqueous fluid upon the body, chemical agents, under great dilution, are rendered more diffusible over the system, and more efficient on the nerves, than grosser substances.

This virtue of the watery menstruum is exceedingly modified by temperature,

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* Thomson's System of Chemistry, Vol. III.

which necessarily gives a diversity of character to mineral springs, and shews the advantage of using such waters, whether internally or externally, at the fountain head. Those of a warm temperature are generally denominated thermal springs, in consequence of their original and usual application to the purposes of baths. When drunk, they are stimulating for a short time, a glow of warmth being felt in the stomach, and sometimes a slight giddiness in the head; but they are, notwithstanding, relaxing in their ultimate effects, when of a temperature above that of the human body; while those that are cold are tonic and bracing.

The utility of mineral waters established by the test of experience, has caused their situations, before unfrequented, to be converted into places of ease and convenience, and to be decorated with the embellishments of art, for the attraction of

invalids of leisure and opulence. Thus some of the most beautiful and romantic spots of this island have been brought into public notice under the denomination of watering places, and have become celebrated for their baths, and fountains of health. They are, however, efficacious in the cure of diseases through other means also, acting in conjunction with their waters.

The absolute necessity of the atmosphere in the wonderful operation of life, establishes its influence in diseases as a natural inference, were the testimony of experience even wanting. When it is deteriorated, therefore, as it must be, in crowded cities, by the respiration of men and animals, and by an incalculable mass of exhalations of all kinds, the valetudinarian, in quitting the sphere of its baleful action, for the pure and uncontaminated atmosphere of a watering place,

will find the mere change of air a great auxiliary to its mineral springs. It is consequently of importance, under every form of disease. Exercise in the air is another of the advantages of these places of fashionable resort, which should never be neglected. Riding on horse-back is perhaps the most salutary kind, particularly in company with agreeable friends, as their conversation may tend to exhilirate the spirits, and to beguile the attention from the afflictions of the body; for the mind has a powerful influence in the cure of diseases, and requires, for the well-being of man, occasional relaxation from the cares of the world. On this account the amusements at watering places, enjoyed with moderation and prudence, are beneficial. They must not, however, interfere with the regular habits of life, essential to the re-establishment of health, the neglect of which, in the higher circles of society, is too frequently the cause of its loss.

This dominion which the mind has over the body, although the medium of its operation is little understood, is a fact firmly established by daily experience, and the phenomena of life.

" Spiritus intus alit totamque infusa per artus
" Mens agitat molem."—*Virgil.*

To it is to be referred that destructive melancholy which seizes the poor Swiss, when absent from his own land, on hearing his little native air called *le rans des vaches.* " Cet air si cheri des Suisses, qu'il fut defendu sous peine de mort de le jouer dans leurs troupes, parce qu'il faisoit fondre en larmes, deserter, ou mourir ceux qui l'entendoient, tant il excitoit en eux l'ardent desir de revoir leur pays.*"

The confidence, then, in natural remedies to which the mind is prone, gives to

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* Rousseau, Diction. de Musique.

these fountains and baths a medical character not to be attained by the imitation and substitutions of art, and renders them objects of general interest. "I am persuaded," writes the celebrated Lady Mary Wortley Montague, "mineral waters, which are provided by nature, are the best, perhaps the only real, remedies.*"

Although watering places may, under certain circumstances of disease, be visited at all times, yet the best seasons for repairing to their salutary wells are the summer and autumn, to combine the benefits of air and exercise, already mentioned with those of the waters, which, at these periods of the year, are in the best possible state to remove those affections for which they are employed.

In travelling to them, the debilitated invalid should proceed by short stages,

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* Letters during her last residence abroad, v. II. p. 9.

during the cool of the morning, and should carefully avoid fatigue, the mid-day heats, and evening dews, the too frequent causes of fever, and other destructive maladies.

On the termination of the journey, the repose of a day or two, in certain cases, may be adviseable, previously to commencing a course of the waters. Those which are to act on the alimentary organs only, should be drunk on an empty stomach; but those intended to operate on the general system, may be taken at all times of the day. The best time, therefore, for taking those of a purgative quality, is early in the morning. They should all be used in divided doses, of such quantities as to avoid the injurious effects of distension, and during such a period as the nature of chronic diseases requires. This last observation applies equally to the baths, which may, according to circumstances, be employed at different hours of the day.

Mineral waters have usually been divided according to their chemical properties. As none of them, however, possesses a simple character, but they all have to each other certain relations arising from the quantity and quality of their ingredients, I have adopted another arrangement, founded on their medical effects, as more important to the purposes of health than any scrupulous classification of their mere contents.

Cold Diluent Waters

Are those which contain the smallest possible quantity of foreign impregnation, and are of a low temperature.

Malvern Water.

Such is the character of the spring at Malvern, a village situated about half way between Ledbury and the city of

Worcester, and which has acquired the name of the holy well, from the reputed sanctity of its water, and its long established efficacy in the cure of many chronic diseases.

The remarkable purity of this water, whereby it is enabled to pervade the minutest vessels of the body, and to wash away, as it were, all impurities and obstructing viscidities, seems to be the sole cause of its medical powers.

When first drawn it appears quite clear and pellucid, and does not become sensibly turbid on standing. It resembles, in every respect, pure good soft water.

Its contents are a minute proportion of carbonic acid in an uncombined state, a very small quantity of earthy matter, perhaps a very little neutral alkaline salt, and a very large proportion of water.

Malvern water is principally employed as an external remedy. It has been found eminently serviceable in painful and deep-seated ulcerations, occurring in a scrofulous habit of body, attended with local irritation and fever, in inflammations of the eye and eye-lids, and in those eruptions accompanied with intolerable itching, where there is great irritation, and where the skin is apt to break into painful fissures that ooze out a watery, acrid lymph. On its first application to an inflamed surface, it will often increase for a time the pain and irritation, which, however, go off in a few days.

The great benefit arising from its external use has led to its employment in some internal affections, and often with success, as the following painful disorders of the kidneys and bladder, attended with a discharge of bloody, purulent, or fetid urine, in hectic fever, the consequence of scrofulous ulceration of the lungs, or irri-

tating sores on the surface of the body, and in old fistulas.

In these complaints it should be used at all times of the day, constituting a common or diet drink, for

"Nothing like simple element dilutes
"The food, or gives the chyle so soon to flow."
ARMSTRONG.

Its effects on the bowels are by no means constant. Sometimes it purges briskly for a few days, but occasionally it constipates, particularly those who are addicted to the use of malt liquors.* In all cases it increases the secretion of urine, and if it agrees with the invalid, it improves his appetite, spirits, and general health. In some instances it produces slight nausea, drowsiness, giddiness, and head-ache; but

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* See a Treatise on Malvern Holy Well, by the late Dr. John Wall, of Worcester.

these symptoms soon disappear, or yield to a gentle purgative. These occurrences Dr. Wall ingeniously enough refers to a temporary plethora, or fulness of the vessels of the head, produced by the rapidity and ease with which this pure liquid enters the absorbent system.

The duration of a course of this water must be regulated according to the nature and inveteracy of the disease.

The local disorders should be kept constantly wet with it by means of linen dipped in the water and renewed when dried.

The bowels should be kept regular by occasional doses of aloes, rhubarb, or Epsom salts; and the diet should be bland and nutritive.

The rich and beautiful scenery of this watering place, the salubrity of its at-

mosphere, its delightful walks and rides, tempting the invalid to active exercise, and its exhilirating influence on the animal spirits, arising from these circumstances, constitute important auxiliaries in the cure of diseases, and powerful attractions to its fountain of health.

Tepid Diluent Waters.

These are thermal waters, and possess various degrees of heat.

Although not so pure as the cold diluent waters, yet they contain so little foreign matter that their effects must be ascribed to the fluid operating partly by its warmth, and partly by its power of dilution. They are generally appropriated to baths, although in some cases they are drunk with benefit.

Matlock Waters.

The village of Matlock, romantically situated in a hilly part of Derbyshire, presents to the eye of taste one of the most striking spots of picturesque scenery.

It possesses several cool springs, the waters of which are conveyed into baths for medical purposes. The temperature, according to Dr. Perceval, is usually at 66 degrees.* The Matlock Water is, therefore, the lowest in temperature of the English thermal waters.

It is remarkably clear, has no particular taste, and mixes well with milk.†

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* See Perceval's Essays, vol. II.

† See Saunders on Mineral Waters, p. 128.

It is principally employed as a bath, and is beneficial in all cases of debility occurring in delicate constitutions, that cannot support the shock of the ordinary cold bath. It forms, on this account, a good intermediate bath between Bath or Buxton and the sea; and may be employed to prepare the invalid for the latter.

As an internal remedy it may be used in all cases where a mere diluent, having a tendency to the skin, is required.

Bristol Hot-well.*

This celebrated spring is situated at the bottom of a lofty cliff, called St. Vincent's rock, on the banks of the Avon, and about

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* See Dr. Nott's Treatise of the Hot-well near Bristol, and Dr. Carrick's Dissertation on the Medical and Chemical Properties of the Bristol Hot-well.

a mile distant from the city of Bristol. The air is genial and salubrious from its agreeable southern exposure, being sheltered by high ridges of dry limestone cliffs from the bleak north and east winds, and likewise from the boisterous west. It is, therefore, well calculated, in every respect, to renovate the health and spirits of the invalid; and, from its mild atmosphere, to be a winter residence.

The hot-well water is extremely clear and sparkling, and separates numerous air bubbles when poured into a glass. It has no decided taste or smell, although rather agreeable than otherwise to the palate. It is nearly of the specific gravity of distilled water, which circumstance alone sufficiently proves its purity. It does, however, contain a very small portion of calcareous and of purgative salts, some carbonic acid gas and atmospherical air, and a large proportion of water. Its average temperature is steadily at 74 degrees.

It is entirely an internal remedy. Its sensible effects, when warm and fresh from the spring, are generally a gentle sensation of warmth in the stomach, and sometimes a slight degree of head-ache, and giddiness; but these symptoms are only transient, and may speedily be removed by a gentle aperient. It increases, in most cases, the flow of urine, and the perspirable state of the skin; but it has a tendency to constipate the bowels, which effect should be obviated by the requisite remedy.

Its operation is highly salutary in several disorders of the alimentary canal, in those dyspeptic symptoms with which Europeans who have long resided in hot climates are commonly afflicted, in chronic, bilious diarrhœas, and mild dysenteries. It has afforded relief in diabetes, by rendering the system more sensible to the impressions of the appropriate medicines;

but the high reputation which it has acquired is above all, in alleviating some of the most distressing symptoms of pulmonary consumption, as the harrassing thirst, the dry burning heat of the hands and feet, the partial night sweats, and all those symptoms which are peculiarly hectical. From the relief which it thus affords, even in the advanced period of this formidable disease, it may materially contribute, in the early stages of it, to a re-establishment of health. The season for the hot-well is, from the middle of May to October, to combine the advantages of air and exercise.

The following is the usual mode of taking the water: two glasses should be taken as early in the morning as the invalid's time of rising will permit, with half an hour spent in gentle exercise interposed between them; and this quantity should be repeated in the same manner, midway,

between breakfast and dinner. The size of the glass should be from a quarter to half a pint, which last may be considered a full dose. At no time should it be taken in such a quantity as to cause any oppression, or sense of weight in the stomach.

As the effects of this water is extremely gradual, the duration of a course of it must necessarily be for a long time, to experience the full benefit arising from its use.

Another spring resembling the hot-well is at Clifton, called Sion Spring,—equally noted for cures in similar diseases.

Buxton Water.

Buxton, so celebrated for its medical springs, is a considerable village, situated

in the north-western side of the county of Derby, on the borders of Cheshire, from which it is separated by a chain of lofty hills, intersected by deep ravines. The summits of these hills are bare, and their sides but thinly covered with verdure; giving the face of the surrounding country a bleak and barren character, notwithstanding the fertility and beauty of the vallies.

The climate is ungenial — the winter being severe, the spring tardy, and the summer uncommonly rainy. With all these imperfections, Buxton still possesses some advantages for the invalid, from the excellence of its accommodation and roads; from the dryness of its soil, composed principally of limestone, which allows exercise immediately after rain; and from the turbulence even of its atmosphere, which prevents every mischief arising from stagnation of air.

It has been long noted for its warm springs; and from the remains of Roman antiquity which have been discovered near it, it was probably in repute among the Romans.

These springs issue to the day through small fissures in a hard, calcareous freestone. They are numerous, and supply a sufficiency of water for the large consumption occasioned by the numerous baths, and the other purposes for which it is employed. The original fountain is St. Ann's well, which is enclosed in an elegant stone building. The other springs are precisely similar in quality, and are received into a number of beautiful and convenient baths, both public and private.

In sensible properties, the Buxton water cannot be distinguished from common spring water, heated to the same temperature. It is quite clear and colourless,—

does not become turbid on exposure to the air,—leaves no deposit,—and is entirely devoid of smell or taste. Its temperature in the gentlemen's bath is invariably 82 degrees. As this heat is several degrees below that of the human body, there is a slight shock of cold felt on the first immersion into the Buxton bath; but it is succeeded almost immediately by a pleasurable and soothing glow. On account of the slightness of this shock, this bath is well adapted to renovate the strength of delicate habits, and to prepare them for the more powerful remedy of sea-bathing. For this purpose it should be used two hours before dinner, and gentle exercise in the open air should be taken after it.

Buxton water is employed largely, both in external and internal use. As an internal remedy, it has afforded considerable relief in defective digestion, and derangement of the alimentary organs, consequent

upon a life of high indulgence and intemperance; and in painful affections of the kidnies and bladder connected with the formation of calculus. It appears to produce various effects on the bowels—not unfrequently a diarrhœa or looseness* succeeds, for a few days, its use; but more commonly constipation follows. The former is a salutary symptom, and must not be checked. The latter is injurious, and must be removed by aperient medicines, especially in those habits where the action of the alimentary canal is naturally sluggish. Two glasses, of about a third of a pint each, before breakfast, interposing between a little gentle exercise, and the same quantity repeated between breakfast and dinner, form a proper course of

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* This effect of the Buxton water depends entirely on the nature of the contents of the stomach and bowels.

Buxton water, which must be continued according to the duration of the disease.*

Diuretic Waters.

These waters, along with a portion of saline and alkaline matter, have a large impregnation of carbonic acid, which communicates certain sensible qualities, and increases their medical powers. They may chemically be denominated highly carbonated alkaline waters.

Seltzer Water.

Such is the character of this water, which is imported to this country in stone bottles, closely corked and sealed, from the spring of Seltzer, in the village of Nieder-Seltzer,

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* See Observations on the Effects of Buxton Water, by Joseph Denman, M. D.

situated in a fine woody country, about ten miles from Frankfort.

This water, when fresh or well preserved, is perfectly clear and transparent, and sparkles much on being poured into a glass. To the taste it is pungent, gently saline, and alkaline; but this pungency it loses on exposure to the air, from the escape of the carbonic acid gas.

Its contents are carbonate of lime, of magnesia, of soda, muriate of soda, and a large proportion of uncombined carbonic acid gas, the cause of its acidulous flavour, and sparkling appearance.

The operation of this water in moderate doses is to raise the spirits, improve the appetite, and increase the urinary discharge.

It is particularly serviceable in alle-

viating some of the symptoms indicating a morbid condition of the lungs, as in checking the profuse night sweats and constant cough, and in diminishing the fetid purulent expectoration, and frequent flushings attendant on slow hectic fever.

From its excellent property of allaying irritation, it forms a useful remedy in those eruptions of the skin dependent on a disordered state of the stomach, and in various derangements of that organ, and of those viscera connected with it, as indigestion, acidity, heart-burn, bilious vomiting, spasmodic pains in the bowels, bloody or highly-offensive stools, in gonorrhœa, and particularly in painful affections of the kidnies and bladder, marked by purulent discharge, and difficult micturition. It mixes well with milk; and this mixture is strongly recommended by the illustrious Hoffman in cases of hectic fever, with expectoration. The usual dose

is from half a pint to a pint; and the only precaution necessary during its use, is to preserve a regular state of the bowels.*

Cold Stimulant Waters.

These waters contain carbonic acid, with portions of saline and metallic matter, chiefly carbonates of lime, magnesia, and iron: but the carbonic acid in excess still communicates the same sensible qualities, modified, however, with regard to medicinal powers, by these impregnations.

Spa Water.

The spring which supplies this water

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* See Hoffman, "De Elementis, et Viribus Fontis Selterani," in vol. v. of his Works; and a Treatise on Mineral Waters, by W. Saunders, M. D.

is called Pouhon, and is in the centre of the village of Spa, in the principality of Liege.

In cold dry weather it appears colourless and clear; but in moist weather the surface of the well becomes turbid, and on the approach of rain, a humming noise is heard, which the country people call the music of the spring.

This water when fresh taken out of the well, scarcely sparkles; but in a few minutes it separates small air-bubbles, which adhere to the inside of the glass, and increase very copiously when the water is shaken, or poured from one glass into another.

It has a bright appearance, and an agreeable acidulous taste, with a strong chalybeate impression; but it loses these sensible qualities on exposure to the air;

although, when kept in bottles well corked, and covered with cement, it will preserve its original state, nearly unaltered, even for two years. It is composed of the carbonate of iron, of lime, of magnesia, of soda, of the muriate of soda, and a large proportion of uncombined carbonic acid. It is consequently a hard acidulous water, but the quantity of alkaline matter which it contains is, notwithstanding, sufficient to make it mix very uniformly with milk, and to give it antacid properties, after the carbonic acid has been expelled by the heat of the stomach.

The sensible operation of this water is decidedly stimulant. When taken in a full draught, particularly in hot weather, or upon an empty stomach, it strikes the nose with a pungent vapour, and occasions a swimming in the head, and a degree of intoxication, which sometimes continues for half an hour; but does not debilitate.

Although by its general stimulant quality it promotes every secretion, its most regular determination is to the kidnies and the skin.

It is particularly well calculated to afford relief in acrid discharges from the urinary passages in all disorders in females, arising from derangement in the menstrual evacuation, and especially in removing sterility, when the consequence of fluor albus, or relaxation of the uterine system; and in the male sex in preventing involuntary discharge of semen, and the weakness induced by gonorrhœa.

In disorders of the alimentary canal, as bilious vomiting, diarrhœa, and dysentery, it proves an excellent auxiliary remedy, particularly in restoring the tone and healthy action of the stomach and bowels.

Its diffusive stimulant character ren-

ders it improper in all inflammatory complaints.

During its use the regular action of the bowels should be maintained by occasional doses of some aperient medicines.

The dose of this water is usually about half a pint, three or four times a day, increased gradually until some effect is produced on the secretions. After this no further increase is necessary. The course must be continued so long as there are signs of its salutary operation on the disease, and of ultimate success.

Some invalids on the spot are in the habit of diluting, with this water, the wine which forms their common drink. This beverage is found pleasant and salutary.*

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* See Dr. Saunders's Treatise on Mineral Waters.

Pyrmont Water.

This celebrated chalybeate spring at Pyrmont, in the province of Westphalia, possesses the same medical properties as the Pouhon at Spa, although it has been thought to be considerably rougher, and more active in its operation.

It is indicated in the same diseases, and it requires similar precaution in its use.

Hot Stimulant Water.

The warm temperature of these waters increases their stimulant properties, and their determination to the skin and urinary organs.

Bath Water.

The beautiful city of Bath, composed of a noble assemblage of splendid buildings, decorated with a profusion of elegant architectural ornaments, is situated in a deep narrow valley, on the banks of the Avon, in the county of Somerset, with a surrounding landscape diversified by moderate hills and vales, highly fertile and well cultivated.

From the many interesting Roman remains which have been discovered, particularly a set of baths with all the apparatus for warm and vapour bathing, this city appears to be of considerable antiquity. It is probable, therefore, that its thermal springs were in repute with the Romans, when in this island.

These springs are numerous,—are of a higher temperature than any other in this kingdom,—and are eminently accommodated to the use of invalids, by the erection of elegant baths, and of other buildings, for their convenience and amusement.

The principal sources of these waters are three; called the King's Bath, the Cross Bath, and the Hot Bath. They appear to differ slightly in properties from each other; the first having the strongest impregnation of iron, the most carbonic acid, and active neutral salts, with the least selenite, and other earthy residuum; the second being very little weaker as a chalybeate, as well as in gaseous and saline contents, but yielding more earthy residuum; and the third being still less chalybeate, gaseous, and saline, but much more earthy, with a temperature in the pump two degrees lower than that of the others.

From the various chemical investigations of these waters that have been made, the following general conclusion may be formed of their composition: that they hold in solution but little, if any, neutral alkaline salts, and therefore are scarcely saline; that they are, in a very slight degree, impregnated with carbonic acid, in a still slighter degree with iron, and as it should seem, only when hot from the spring; and that they contain a good deal of calcareous, and a little silicious earth, which render them hard, and unfit for domestic purposes.

When drunk fresh from the springs, they have in most persons the effect of raising and rather accelerating the pulse, increasing the heat, and exciting the secretions. These symptoms take place in a few minutes after drinking them, and, in certain habits, will continue for a considerable time. They are thus a stimulant

of a diffusible nature, acting more immediately on the nervous system, and particularly on the skin and kidnies.

Their effects on the bowels, like that of all waters which do not contain any purgative salt, is uncertain; in general, however, they induce a costive habit of body, which should be obviated by occasional doses of some mild aperient medicine.

The diseases for which they are resorted to are very numerous. In most of them the bath is employed along with the internal use of the water.

They are indicated in all those cases where a gentle, gradual, and permanent stimulus is required; and when there is no circumstance to occasion danger from the sudden heat and increase of pulse which so often attend their exhibition.

Their heating quality points out the ne-

cessity of much caution in their employment, which might often do considerable injury in various cases of active inflammation, especially in irritable habits, when there exists a strong tendency to hectic fever; in those states of diseased and suppurating viscera, and wherever a dry tongue and quick pulse indicate a degree of general fever. The disorders, therefore, to which they are suited, are of the chronic kind, and are the following: chlorosis and menstrual obstructions; affections which bear the preparations of iron well, and are at all times, relieved by their administration.

In these cases the bath will eminently assist to remove that languor of circulation, and obstructions of the natural evacuations, which characterize these frequent and distressing maladies of the female sex.

Hypochrondriasis, dyspeptic disorders,

spasms of the stomach and bowels, jaundice, arising from simple obstructions of the gall ducts; and those morbid conditions of the system brought on by a long residence in a hot climate, or by intemperance in a cold one, and marked by derangements in the biliary secretion.

By their power of exciting the motion of the vessels when languid, they are likewise efficacious in inertia of the nervous system, as paralytic affections. When these are seated in the extremities the waters are usually pumped* upon the part, and this partial application is considered equally beneficial as the hot-bath, and less stimulating to the general constitution. It is consequently much employed.

Bath is greatly frequented by indivi-

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* This pumping is strangely enough denominated dry pumping.

duals afflicted with rheumatism and gout. The waters are, however, useful only when the inflammatory stage of these diseases is over, and when there remain signs of weakness of the organs of digestion, such as nausea, eructations, flatulence, and want of appetite.

The quantity of water taken daily by adults, during a full course, is recommended by Dr. Falconer not to exceed a pint and a half or two pints, and in chlorosis, with irritable habits, not more than one pint; and this allowance should be divided into three portions, of which two should be taken before breakfast, at different times, and one afterwards.

The morning is the time generally chosen for the bath, which is usually employed two or three times a week. The duration of the immersion should be regulated by the sensations of the invalid,

from ten minutes to half an hour, should no degree of lassitude or faintness occur.

The choice of the baths is a matter of importance, from the great difference in their respective temperatures; that of the Cross Bath being about 94 degrees, while that of the King's Bath is at least eight degrees higher. The former is consequently a tepid bath, although it feels warm to the skin, and may be used for the common purposes of health; but the latter is a hot bath, and should be confined to those cases requiring the most stimulating application, as rheumatic and paralytic affections of the joints.

The more temperate seasons of the year are generally recommended for the use of the Bath waters, which should always be aided by moderate and regular exercise.

The course should be continued for a considerable time to make a fair trial of

their efficacy, their operation being very gradual.

The regimen should be suited to the nature of the disease, and the habits of life should be regular.*

Tonic Waters.

The contents of these waters are the oxyde of iron, held in solution by carbonic acid, with a little saline and earthy matter. Their leading distinction is the chalybeate impregnation to which all their medical properties are to be referred.

Tunbridge Water.

Tunbridge Wells, a populous village in

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* See Dr. Falconer's Dissertation on Bath Waters, and Dr. Charlton's Three Tracts on the same subject.

the county of Kent, about thirty-six miles South of London, contains many chalybeate springs, resembling each other in chemical composition. Two are chiefly appropriated to medical use; and they afford an abundant supply of water for the numerous invalids who yearly resort to this watering place.

The sensible properties of this water, when first taken up by the reservoir, are the following: it is colourless, clear and bright, and has no perceptible smell. It does not sparkle in the glass, but it slowly separates a few air bubbles which adhere to the sides of the vessel. It has, in a slight degree, a ferruginous taste, without any saline or acidulous impression.

If exposed to the air for some hours, the disengagement of minute air-bubbles increases, the liquid grows turbid, a yellowish iridiscent pellicle encrusts the surface, and in twenty-four hours, the water

has entirely lost its chalybeate impregnation. This effect takes place more speedily when the water is heated.

the analysis of the Tunbridge springs shews it to be a simple carbonated chalybeate water: it is, therefore, purely a tonic.

Soon after taking a moderate dose, the strength of the pulse is increased, and a certain degree of warmth is felt, occasioned by the accelerated circulation; and by persevering in the use of the water, the appetite and spirits are improved. These effects are most obvious in irritable and sanguine habits.

On commencing a course of this water, it is not uncommon for the invalid to experience nausea, vomiting, and pain about the heart; or else a heaviness in the head, slight giddiness, and a sense of fulness over the whole body, which symp-

toms, however, soon disappear; but should they continue, the use of the water must then be abandoned.

Its general operation is to increase, in a gradual manner, the tone of the secretory system, and by the permanency of its tonic power, to augment the strength, nervous energy, and vigour of all the functions of the body. It is, therefore, in those chronic diseases that arise from slow beginnings, and are attended with great laxity and debility of the solids, that this water is particularly indicated.* It is eminently efficacious in fluor albus, or in profuse menstruation, and in removing barrenness, or a tendency to abortion, arising from weakness in the uterine system. Chlorosis, which is intimately connected with

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* See Dr. C. Scudamore's Analysis of the Mineral Water of Tunbridge Wells, with some account of its mineral properties.

this derangement, and its attendant disposition to a cachetic state of the body, and to general dropsy is much benefited by the Tunbridge water, notwithstanding the feverish irritation which always subsists, the head ache and difficult breathing might seem to forbid its use.

In impaired appetite, irregular digestion, flatulent distension of the abdomen, from debility of the assimilating organs, and in all cases of general weakness, unconnected with visceral obstructions, or inflammatory symptoms, it affords an excellent remedy.

To persons of a weak and irritable habit, the fresh drawn water is apt to prove too cold, and to cause sickness. This inconvenience is easily prevented, by giving to the water a tepid warmth ; and to do this, it is the best method to put it into a bottle, closely corked, and to im-

merse the whole into hot water; for, by this means, but little of the carbonic acid escapes, upon which so much of its virtue depends.

In chlorosis and other disorders of debility it is frequently of service, to conjoin the employment of the warm bath with the internal use of the water.

The daily allowance should be taken at two or three intervals, commencing about eight o'clock in the morning, and finishing about noon. The dose at each time varies from one quarter to three quarters of a pint, according to the age, sex, constitution of the invalid, and duration of the course; for all ferruginous waters lose much of their effect by long habit.

The requisite period for a course may be computed to be, from one month to two months; preparatory to which, and

during its continuance, some aperient medicines should be taken to cleanse the bowels, and to keep them regular ; for all chalybeate waters have a tendency to constipate.*

Exercise in the air should daily be taken. The diet should be mild and nutritive ; and the general habits of life regular.

The sea-port town of Hastings, on the Sussex coast, possesses a similar chalybeate spring, applicable to the same diseases, and has an advantage from its situation of affording the means of sea-bathing, which is frequently a powerful auxiliary in the cure of some of the disorders for which this mineral, tonic water, is pre-

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* To prevent alarm, it is necessary to observe, that all chalybeate waters tinge the fæces black.

scribed; it is, therefore, worthy of the attention of the invalid.

Tonic and Aperient Waters.

These waters, in addition to iron and carbonic acid, hold in solution a quantity of some purgative salt, which is sufficient to give them, when taken in a moderate dose, a decided determination to the bowels; but which is rendered so gentle by the salutary operation of the chalybeate and carbonic acid impregnation, as not to occasion any griping or faintness after their use.

Cheltenham Water.

The saline chalybeate spring to which the town of Cheltenham, in Gloucestershire, owes its celebrity, issues from a bed of

sand, intermixed with blue clay. The well is about six feet deep, and is excluded from communication with the external air. The sides are covered with a yellow ochre, indicating the ferruginous quality of the water.

When first drawn it is perfectly clear; but it becomes turbid by standing. Its taste is saline and chalybeate, leaving a slight impression of sea-salt in the mouth. The temperature is from 53 to 55 degrees. Its contents are muriate of soda (sea salt,) sulphate of magnesia (Epsom salt,) sulphate of soda (Glauber's salt,) carbonate of iron, muriate of magnesia, muriate of lime, sulphate of lime, carbonic acid gas, and atmospherical air.

The sensible effects produced by this water are, generally, on first taking it, a degree of drowsiness, and sometimes headache; but these symptoms soon go off

spontaneously, even previously to the operation of the bowels. A moderate dose acts speedily as a cathartic, and in common with all largely diluted saline waters, it acts in a very mild manner, without causing griping or weakness.

Its use therefore may be continued for a considerable time without producing any inconvenience to the body; on the contrary, the digestive organs will be strengthened, the appetite improved, and the whole constitution invigorated by it.

When the dose is too small to act upon the intestinal canal, it will commonly determine pretty powerfully to the kidnies.

Cheltenham water has been found of essential service in the cure of many diseases of the chronic kind, from the combined influence of its saline and ferruginous impregnation. It is particularly efficacious

in stomach complaints, by diminishing the effects of acrimonious matters in the alimentary canal, by gently removing the oppressive load of undigested food from the debilitated organs, and by bringing the body to a regular solutive state, without weakening the digestive powers. From the sympathy which exists between the bowels and the skin, it is equally salutary in removing various cutaneous disorders, which, in popular language, are called scurvies.

It is highly useful in all those affections connected with derangements of the hepatic system, and marked by the symptoms either of excess or deficiency of bile, and an irregularity in its secretion. Persons, therefore, who have injured their biliary organs by a long residence in hot climates, or by indulgence in the luxuries of the table, derive much benefit from a

course of this water, judiciously administered.

The humid state of the bowels of children favours the growth of worms; the Cheltenham water will be found advantageous in expelling them; for its ferruginous quality assists to destroy them, while its gentle aperient operation allows it to be repeated without injury to the constitution.

In suppressed menstruation and leucorrœa it has a salutary influence. In short, it appears to be indicated in all cases, requiring a continued and moderate alvine evacuation.

The season for drinking the Cheltenham water is during the whole of the summer months; and the time of the day, found by experience to be the best, is early in the morning, when the stomach is empty.

The dose ought always to be moderate on first using it, and the quantity increased according to the effects produced on the body. It will consequently depend very much on the age, sex, constitution, and disease of the invalid; and whether it is intended gently to augment the natural evacuations, or to act as a brisk cathartic. A small tumbler, containing about six ounces of the water, will, in general, be a sufficient dose at the commencement of the course. This quantity may, however, be repeated, if required, after walking a quarter of an hour, or twenty minutes.

When the water disturbs the stomach, instead of passing off freely, Cheltenham salts should be added to one of the glasses. These salts are kept in a state of solution at all the wells, for the purpose of strengthening the water, when it is not sufficiently active of itself.

The symptoms of nausea, flatulence, and vomiting, which sometimes occur from its use, will be relieved by peppermint drops, ether, or a tea-spoonful of the simple tincture of cardamoms, taken with the water, or after it. When it continues to cause head-ache or giddiness, the water should be warmed, or exposed to the at-atmosphere for a few minutes, before it is drunk, to dissipate the aerial principle; and after drinking it, the invalid should walk about in the open air.

The temperature of the water is of some importance. In its cold state it braces the stomach, and cools the body; but in its warm, it relaxes. Invalids should, therefore, endeavour to habituate themselves to the use of it in the coldest state, except in those cases where warmth is required, then some of the water, which is kept on purpose by the pumper heated, should be added to each dose.

The duration of the course necessarily varies with the nature of the disease, and the effects of the water on the constitution.

The diet should be light and nutritive. Flatulent food, malt liquors, and acid fruits, which are apt to occasion griping and habitual purging, should carefully be avoided.

Daily exercise and regular habits of life are indispensibly necessary.*

Scarborough Water.

The town of Scarborough is situated on the declivity of a very high cliff, on the

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* See Dr. Jameson's Work on Cheltenham Waters, and Dr. Smith's "Observations on the Nature, Use, and Abuse of the Cheltenham Water."

Yorkshire coast, overlooking a spacious semicircular bay, terminated by lofty rocks. The mineral springs issue from the bottom of a cliff, about half a mile south of the town. They are in number two, and arise contiguously to each other. Notwithstanding this proximity, they differ in their composition. One is a chalybeate tonic water, like the Tunbridge; and the other, which is particularly distinguished as the Scarborough water, is a chalybeate aperient, having an admixture of purging salts with its ferruginous ingredient. It is thus similar in composition to the Cheltenham water, and is applicable to the same diseases.

This town has an advantage of situation which Cheltenham has not, that of affording an opportunity for sea-bathing, the use of which will, in many cases, assist in the cure of the diseases for which the mineral water is employed.

Tonic, Aperient, and Diuretic Waters.

These waters differ principally from the preceding, in having a warm temperature, and an alkaline impregnation, from which they derive* a decided diuretic quality.

Vichy Water.

The town of Vichy is situated in a very fertile plain, watered by the river Allier, full of vineyards and fruit trees. This plain, which is not distant far from the lofty mountains of Auvergne, abounds with springs of different kinds, hot, tepid,

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* See Dr Saunders's Treatise on Mineral Waters, p. 304.

and cold waters being found here, almost contiguous to each other.

There are six sources at Vichy, which vary a little in temperature, and in the proportion of their foreign contents. They all leave in their channels a yellowish mud, which is principally oxyde of iron, and they have a saline and bitter taste. They are consequently warm, chalybeate, and alkaline aperient waters, and are serviceable in all disorders of the stomach, attended with acidity and flatulence, in bilious diarrhœa, and cholic, arising from derangements of the hepatic organs, and in a sluggish torpid state of the bowels, causing loss of appetite, and irregularity in the functions of the whole body.

The employment of these warm waters, for the purpose of bathing, extends their utility to rheumatism, sciatica, gout, and many other diseases. In these cases the

internal use of the waters very properly accompanies the external; particularly in many of the disorders peculiar to the female sex, owing to a defect in the functions of the uterine system.

Hence, these springs have acquired great reputation for the cure of irregular menstruation, chlorosis, and barrenness.

The waters of the Mont d'or in Auvergne, of Bourbon Lancy, and Bourbon l'Archambault, are equally frequented, on account of their efficacy. To those of Bourbon Lancy, the celebrated Catharine de Medicis, the mother of several French princes, is said to have been much indebted for her fertility.*

Carlsbad Waters.

Carlsbad, in Bohemia, contains several

* See Dr. Saunders's Treatise on Mineral Waters, p. 307.

springs, all of which resemble each other in temperature, and in chemical properties. The most important of these is one which is intolerably hot to the touch, and has been denominated *Prudel,* or furious spring, from its boiling up with violence. This is the fountain which supplies the drinkers and the greater number of baths. Its temperature is 165 degrees, which is hotter than any other mineral water employed medicinally. It requires to be cooled before it can be drunk, or used as a bath.

In consequence of this great heat, there is always a thick vapour hovering about the mouth of the spring, from the density of which, and tardiness in dispersing, the country people foretel the approach of rain.

The taste of this water is ungrateful, being alkaline, saline, bitter, and strongly chalybeate.

In its operation it is tonic, aperient,

and diuretic; and has been found eminently advantageous in dyspepsia, and other derangements of the stomach, and in a depraved condition of the biliary secretion.

In consequence of its alkaline quality, it has long been celebrated for the cures of those disorders of the kidnies and bladder, attended with a discharge of sabulous concretions, and a tendency to calculus; and, in consequence of the activity of its chalybeate ingredient, it is highly esteemed for restoring the healthy tone of the uterine system, and thereby removing sterility.

In short, great virtues reside in this water, and from its temperature and abundant quantity, it affords excellent warm bathing, at any degree of heat.

The Emperor Charles IV. in 1370, frequented the village of Carlsbad, for its waters, and brought them into notice; hence they have received the name also of the Caroline Waters.

Besides the Prudel Fountain, there is another held in considerable estimation, called the *Muhlbrunn,* from its turning a mill. Its temperature is 114 degrees. It differs from the Prudel water, in containing more carbonic acid, more soda, and less calcarious earth. It is found in consequence to open the bowels with more certainty. It is employed in the same diseases.

These waters are contra-indicated in plethoric and irritable habits. The dose and duration of the course necessarily varies with the nature of the disease, and their effects on the body; and cannot consequently be specifically stated.*

Tonic and Astringent Waters.

These waters owe their medical properties

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* See Saunders's Treatise on Mineral Waters, p. 313.

to iron and alumine, held in union with a fixed acid, which is always the sulphuric. They are very rare, the most common chalybeate springs being impregnated with carbonic acid.

Hartfell Water.

This water rises from the base of a very high mountain of the same name, about five miles from Moffat, in Dumfrieshire. When taken from the well it is perfectly clear; but it gradually deposits a quantity of an ochrey substance, which is the oxyde of iron in excess, even when closely corked. It notwithstanding retains at all times a large portion of this metal in solution. It will consequently bear transporting to any distance, without losing materially its ferruginous quality. Its active contents are the sulphate of iron, sulphate of alumine, and the oxyde of iron, which

have considerable power upon the human body.

From its tonic and astringent property it is of importance in the cure of many diseases arising from debility and laxity of the solids. As in certain disorders of the stomach and bowels, bloody flux, bloody urine, immoderate flow of the menses, or their suppression, fluor albus, gleet, and in old and languid ulcers, when the texture of the diseased parts is very lax, and the discharge profuse and ill conditioned.

In such local affections it is employed as a topical application also with advantage.

The dose of this water should, in all cases, be very small, and the whole quantity taken during the day should not exceed an English pint, but it may be continued for a long period. Should, at any time, its operation be too powerful, it may

be rendered mild by dilution with a little spring water.

In common with other chalybeate waters it is apt to occasion in some persons a degree of nausea, and a sense of weight in the stomach, when taken cold; but these effects are easily prevented by drinking the water moderately warm. As the iron is combined with a fixed acid, the required temperature may be given to it without occasioning any material change in its properties.*

Brighton Water.†

The chalybeate spring near Brighton,

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* See Dr. Garnet's Observations on Moffat and its Mineral Waters; and Saunders on Mineral Waters.

† See Dr. Marcet's Chemical Account of the Chalybeate Spring near Brighton, in Dr. Saunders's Treatise on Mineral Waters, p. 331.

commonly called the Wick, has long been noticed as a ferruginous water, but it is to the labours of Dr. Marcet that the public are indebted for an accurate knowledge of its chemical composition. It is similar in this respect to the Hartfell water, and is consequently indicated in the same diseases; namely, in all those arising from general debility and relaxation of the solids, unconnected with visceral obstructions, or an inflammatory condition of the system.

The means which Brighton possesses, from its situation on the coast, of affording sea-bathing, a useful auxiliary in the cure of many of the disorders, for which its chalybeate spring may be employed, render it a valuable watering place to the invalid.

There is an aluminous chalybeate spring of equal medical powers in the Isle of Wight, and which has been used with

decided benefit in cases of general weakness, brought on by previous diarrhœas, dysenteries, and fevers, particularly of the remittent and intermittent kind.*

Purgative Waters

Are those in which, without any large proportion of aerial matter, there is an impregnation of some neutral salt, with either an alkaline or earthy basis.

The salts which communicate their purgative power, are the muriates of soda and magnesia, and the sulphates of soda and magnesia. The two last are familiar to every one under the name of Glauber's salt and Epsom salt.

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* See Dr. Lampriere's Report on the Medicinal Effects of an Aluminous Chalybeate Spring lately discovered at Sand Rocks, in the Parish of Chale, in the Isle of Wight.

These waters are mostly cold, although they are found sometimes warm.

Seidlitz or Seydschutz Water.

Seidlitz water is found at a village of that name in Bohemia, and was brought into notice as a medicine of considerable efficacy, by the celebrated Hoffman, about the year 1721.

The spring of Seydschutz is situated at a very short distance from that of Seidlitz, and resembles it in chemical composition.

To the taste these waters are very saline and bitter; but not in the least acidulous. They are not brisk.

Their contents are the carbonate of lime, carbonate of magnesia, selenite, muriate of magnesia, and sulphate of magnesia. From

this analysis it appears that they are decidedly purgative, and that they owe this medical property to their strong impregnation with the sulphate of magnesia, or Epsom salt.

They operate very speedily, and are particularly useful in freeing the body from crude, viscid, acid, and acrid bilious matters. They do not commonly cause griping pains, flatulency, and weakness, like the drastic purges, exhibited in a solid form, or even the milder aperients, such as manna, cassia fistula, or senna; but they gently stimulate the stomach and bowels to expel their morbid contents; and, assisted by their bitterness, tend to restore the tone of these organs, and with it the appetite and digestive powers. Thus they are particularly efficacious in disorders arising from a torpid action of the liver, in a bilious state of the stomach, in habitual costiveness, in hypochondriacal complaints, in sick head-ache, with bilious

vomiting, in some kinds of bilious purging, in exudations and watery humours of the skin, in scrofulous tumours, inflammations of the eyes and eyelids, in ulcers and discharges of the legs, in piles, fistulas, intestinal worms, and in that cachexy of females, attended with costiveness and suppression of the menses, whereby general debility, febrile heat, irritation, loss of appetite, and wasting of the body are induced.

In short, as a loaded and constipated state of the alimentary canal is a common cause of general bad health, it is obvious that these waters may be of infinite service.

The dose is from half a pint to two pints taken in divided portions, with a sufficient interval interposed, to prevent offending the stomach by the mere bulk of the liquid.

Exercise should daily be taken, and the diet should consist principally of soups, and not of solid food. Fermented and spirituous liquors should be avoided. The habits of life should be regular.*

Epsom Water.

The spring which yields this saline water is situated about half a mile from Epsom, a considerable market town in the county of Surrey, about sixteen miles south of London.

The water is transparent, and colourless, and it leaves a bitter and saline impression on the tongue. It is a purgative, and the salt to which it owes this pro-

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* "Examen chymico-medicum fontis sed licencis amari, in Bohemiâ noviter ditecti."—*Hoffmanni Opera. Tom. V.*

perty, denominated in consequence Epsom salt, was formerly prepared from it. This salt is now procured by a chemical process from sea water, for the purposes of medicine.

The diseases to which Epsom water is applicable, are precisely those for which the Seidlitz water is recommended; but being a weaker aperient the dose should necessarily be larger.

The village of Leamington, two miles from Warwick, and forty from Cheltenham, has acquired considerable reputation on account of containing springs of a strong saline water, which supply numerous cold and hot baths.

These springs contain almost entirely sea salt, with very little Glauber, or Epsom salt.* They gently affect the bowels in a

* See Dr. Saunders' Treatise on Mineral Waters, p. 218.

moderate dose, and are consequently useful in all diseases where a purgative operation is required.

There are many other saline springs, containing a notable proportion of some purging salt, particularly in the neighbourhood of this metropolis, as the salt springs of Acton, of Kilburne, of Bagnigge Wells, and of the Dog and Duck, in St. George's Fields.

Sea Water

Is the strongest in saline impregnation of all the mineral waters used medicinally. Near the shore, it is a very heterogeneous compound, holding in solution, besides saline substances, an infinite number of minute animal and vegetable particles,

which being prone to spontaneous putrefaction, render it unfit for keeping.

When taken up near a rocky or clean sandy coast, or at a considerable distance from the shore, it is quite clear and colourless, void of smell, and shews no signs of any unusual quantity of air of any kind. To the taste it is very salt, nauseous, and bitter. It is composed of muriate of soda (common salt,) muriate of magnesia, and selenite.

There is no Epsom salt in sea-water in its natural state, although this salt is procured from it for the purposes of medicine by the addition of sulphuric acid. Sea-water is notwithstanding a purgative, and owes this property to the muriate of magnesia, the source of its bitter taste.

Among its sensible effects may be mentioned thirst. It is on this account too

heating for some invalids, occasioning in them considerable disorders of the organs of digestion. These injurious effects are particularly remarkable in persons of an irritable, hectic, or what is commonly termed bilious habit.

The disorders for which sea-water is generally resorted to, are the same for which all the purgative saline waters are used.

In the quantity of a pint taken before breakfast, it usually proves purgative; when employed simply for this purpose, it should not be repeated oftener than once in eight or ten days, for it produces an increased action of the intestinal canal, which continues for some time.

Beneficial effects frequently result from employing it in smaller quantities as an alterative. A wine-glassful taken every

evening at bedtime, neither operates as a purgative, nor causes thirst; but keeps the bowels regular, amends the appetite, promotes digestion, and improves the general health. It is of infinite service thus administered in scrofulous cases, and visceral obstructions.

If children can be induced to take it in this manner, which may sometimes be effected by mixing it with milk, it generally succeeds in expelling worms, with which they are so commonly troubled.

It forms a useful auxiliary to sea-bathing in restoring the general health. It is, however, by great patience and perseverance only that this medicine has produced any decided advantage, and can be made to assist materially in the cure of many diseases.*

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* See Dr. Saunders' Treatise on Mineral Waters, and Dr. Russel on the Use of Sea-water on the Diseases of the Glands.

Alterative and Detergent Waters.

These waters owe their distinguishing character to an impregnation of sulphur, united either to hydrogen, or to an alkali, or to both, whereby they acquire very sensible qualities of smell and taste, and become very powerful agents on the human frame.

There are several varieties of sulphureous waters, such as hot and cold, simple or saline; and they form a highly valuable medicine.

They are all at once detected by the smell, which is very fetid, resembling the scouring of a foul gun-barrel, or rotten eggs.

None of them will bear carriage to any

distance, in consequence of the ready decomposition of the sulphureous ingredient, and the separation thereby of the sulphur in an inactive form, even in close vessels.

To this class of waters belong the celebrated springs of Harrogate and Moffat, and the still more famous thermal fountains of Aix-la-Chapelle, and Bareges in the south of France.*

Harrogate Water.

Harrogate, situated in an agreeable country, ornamented with a variety of elegant seats, in the center of the county of York, adjoining to the town of Knares-

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* During a course of these waters, whether used internally or externally, the body acquires the smell of sulphur; and silver worn in the pockets becomes tarnished.

borough, has long possessed considerable reputation by containing very valuable chalybeate and sulphureous springs. Sometime ago the former was confined to internal, and the latter to external use. At present the sulphureous springs are employed largely as an internal remedy likewise. They are four in number, and they resemble each other closely in all their properties. As one of these springs is, however, more strongly impregnated with the sulphureous principle than the other three, it is appropriated to internal use, while the remainder are employed to supply the baths.

The water of the drinking well, when first taken up, is perfectly clear and transparent, and sends forth a few air-bubbles. It has a strongly fetid smell, like rotten eggs, and has a nauseous, bitter, and saline taste ; but such is the power of habit in reconciling the palate to the most dis-

agreeable flavour, that most persons soon drink this water without disgust.

On exposure to the air it loses its transparency and becomes pearly and greenish; at the same time the sulphureous odour abates, and the sulphur is precipitated.

It is composed of muriate of soda (sea salt,) muriate of lime, muriate of magnesia, carbonate of lime, carbonate of magnesia, sulphate of magnesia (Epsom salt,) carbonic acid gas, azotic gas, and sulphurated hydrogen.

It is therefore alterative and detergent water, and particularly well calculated for those diseases where such a combined operation is required, as elephantiasis, leprosy, all those pimply eruptions, called in popular language scorbutic, and in every other cutaneous disorder. From its alterative power it is found to possess a

salutary influence in scrofula, in various obstructions of the liver and other organs connected with the alimentary canal, and in all affections arising from a depraved condition of the body.

The advantages of sulphur, as a mild unirritating aperient, has caused this water to be esteemed as a valuable remedy in piles, and fistula in ano, and its character of being a poison to intestinal worms, has brought it into use as a safe and powerful anthelmintic. When thus employed, it should be in such a dose as to prove a brisk purgative. In cases of ascarides it may be used in the form of clyster.

The dose of this water is generally such a quantity as produces a sensible effect on the bowels. Three or four glasses, containing half a pint each, taken at moderate intervals, are usually found sufficient. They should be drank fresh from

the spring, and cold; for the sulphureous impregnation is dissipated by heating. Sugar comfits and aromatic seeds are frequently eaten to correct the nauseous taste of the water; but Dr. Garnet recommends a small quantity of sea-biscuit or coarse bread, as more effectual, without cloying the stomach.

The duration of a course of Harrogate water necessarily varies according to the nature and inveteracy of the disease.

In cutaneous diseases, the warm sulphureous baths should be conjoined with the internal use of the water, which should be taken warm, and repeated at proper intervals, to assist that full perspiration which is promoted by the bathing. The invalid should, at the same time, confine himself to bed, and should be wrapped in flannel to keep up the perspiration for some hours.

In these cases the cold sulphurcous waters are inferior to those which are naturally hot; for by artificially heating the former, some of the sulphurated hydrogen gas is thereby lost, on which their activity depends.

During the use of this natural remedy the habits of life should be regular, and the diet light and nutritive.*

Moffat Water.

The village of Moffat, surrounded by lofty hills, is situated at the head of a valley on the banks of the Annan, about fifty-six miles south-west of Edinburgh.

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* See Dr. Garnett's Treatise on the Mineral Waters of Harrogate; and Dr. Walker's Essay on the Waters of Harrogate and Thorp Arch.

The chief of the sulphureous waters which have given celebrity to this watering place, is contained within a stone-building enclosing a pump. The supply of water is sufficient for every demand.

When first drawn it appears rather milky and blueish; the smell resembles that of bilge-water, being precisely the same as that of Harrogate; and the taste is saline and sulphureous; but not bitter.

When exposed to the air it becomes more turbid, then separates a thin film, which is pure sulphur, and loses thereby all its distinguishing qualities as a sulphureous water. As this change takes place, even in close vessels, it cannot bear transporting to any distance.

It is composed of muriate of soda (common salt,) carbonic acid gas, azotic gas, and sulphurated hydrogen. It is,

therefore, more simple than the Harrogate water, and produces, consequently, effects somewhat different, having a determination to the urinary organs, without any certain operation on the alimentary canal, unless when taken in a very large dose. Some purgative salt should always be conjoined with the internal use of this water to keep the bowels regular.

Moffat is visited principally for the cure of cutaneous disorders. In these cases its sulphureous warm baths are judiciously made part of the plan of treatment.

In the early stages of scrofula it is often of infinite benefit. Glandular tumours are frequently dispersed by its use, without suppuration, or any unpleasant consequences.

As an internal remedy this water is

prescribed in various quantities, according to the age, sex, disease, and morbid irritability of the stomach.

The dose is usually from one English pint to four pints, drunk in divided portions, and with a sufficient interval of time interposed between them.*

Hot Alterative and Detergent Waters.

The medical properties of these waters are greatly increased by their high temperature, which renders them more valuable for certain diseases than the cold alterative detergent waters.

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* See Dr. Garnett's Observations on Moffat, and its Mineral Waters.

They are principally employed as external applications and baths.

Aix-la-Chapelle, or Aken Water.

The City of Aix-la-Chapelle, or Aken, as it is called by the Germans, has long possessed a very high distinction among the other towns in Flanders, in consequence of the celebrity of its hot sulphureous baths In these Charlemagne so much delighted, that he frequently held his levees in them, and made, for a long time, this city his residence, and endowed it with valuable privileges. There are several sources of hot sulphureous waters in it. The principal of them is enclosed within a stone cistern, kept closely shut, whence the water flows into several spacious and elegant baths, distributed through various parts of the city, and distinguished by the name of the Emperor's Bath, the Nobles'

Bath, and the Poor's Bath. There are besides every necessary apparatus for vapour bathing, and for the douche, or pumping on any particular part of the body.

The water rises in the spring with continual sparkling, and at the same time, according to Dr. Lucas's account, separates a considerable number of air bubbles, that break on the surface with a slight explosion. It is at first perfectly colourless and clear. It emits a large volume of vapour, and with it a very fetid odour, similar to that of Harrogate water, but more powerful.

The taste is saline, bitter, and rather alkaline.

The temperature of the several baths vary considerably. The hottest bath being 136 degrees, while the others are found to

possess different degrees of heat, from this point down to 116 degrees.

On cooling the water loses its clearness, acquires a milky hue, and deposits an earthy sediment. At the same time it loses much of its offensive smell, and when cold, retains scarcely any.

It contains carbonate of lime, carbonate of soda, common salt, and an unusual quantity of sulphur.

When taken internally it produces some degree of cheerfulness and gaiety; but, if taken largely, it induces giddiness and sleepiness, and these effects are the greater in proportion to the heat. It often proves mildly laxative, if liberally drunk. It more certainly determines to the kidnies and skin.

It is found serviceable in disorders of the

stomach and biliary organs, that follow a life of continued indulgence in the luxuries of the table; and in affections of the kidneys and bladder, marked by pains in the loins, thick mucous urine, and difficult micturition.

As the heating quality of this water is very decided, it should be avoided in all cases of an inflammatory tendency, in hectic fever, and a disposition to active hæmorrhagy.

The dose is from half a pint to a pint, to be repeated more or less frequently according to the effect on the head, and the intention of drinking it. If taken to produce a determination to the bowels, some saline purgative should be added to quicken its action.

This water is still more extensively employed as an external, than an internal

remedy. The baths of Aix-la-Chapelle are in consequence resorted to, for the cure of a number of diseases. They have been found salutary in stiffness and rigidity of the joints and ligaments, which are the conseqnences of the inflammation of gout and rheumatism, in the debility of palsy, in that which follows a long course of mercury, and in all cutaneous diseases.

Aken water is sufficiently hot to be used as a vapour bath, without the addition of artificial heat. For this purpose the vapour is detained as it passes through the channels that supply the common baths, and is applied by a suitable apparatus, either generally or partially to the body, as occasion may require.

This sulphureous vapour bath is preferable to the common warm bath, and is a more efficient remedy in rheumatic and

paralytic affections of the joints, and cutaneous disorders of long standing.*

Bareges Waters.

The village of Bareges, distinguished for its thermal springs, stands in a wild and romantic part of the Pyrenees, between the Mediterranean and the Bay of Biscay. It is composed of two small hamlets, the principal of which, the lower Bareges, contains the baths, and lodgings for the accommodations of visitants.

The reputation of these waters has for years been established.† "Julius Cæsar, and the Roman general, Sertorius, bathed

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* See Dr. Saunders's Treatise on Mineral Waters.

† See Sir Arthur Clarke's Essay on Warm, Cold, and Vapour Bathing, p. 94.

in them to restore energy to their rigid limbs, after their campaign in Gaul and Spain. Henry IV. of France frequented them in his youth, and Louis XVI. dignified them with an hospital for his wounded officers, and another for his soldiers, who, when past all other means of cure, were, from the remotest parts of France, sent to Bereges as a *last resource.*"

These hot springs are four in number, le Grand Bain,[a] le Petit Bain,[b] le Bain neuf,[c] et le Bain de Delices,[d] and are inclosed in a vaulted stone building, erected by the King of France. They contain the same ingredients, but differ in temperature and in the proportion of sulphur; the hottest being the most strongly impregnated with this active substance, which

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[a] The Great Bath. [b] The Little Bath. [c] The New Bath. [d] The Baths of Delight.

they all, however, lose by contact of the air, and by cooling.

Their respective degrees of heat, according to Farenheit's thermometer, are as follows:

	Degrees of Heat.
That of the hottest bath, named Le Grand Bain, is at.....	111¼
That of the Petit Bain.....	110
That of the Bain Neuf.....	109½
That of the temperate baths, called Les Bains de Delices..	94½

They are extremely light and transparent—impart the taste and smell of liver of sulphur, and emit a quantity of smoke or vapour, which is more or less visible, according to the changes of heat or cold in the atmosphere.

The coolest are used chiefly for bathing; the hottest for drinking, and topical applications.

Chemical analysis shews that they are composed of sulphurated hydrogen, united to soda, of an excess, besides of this alkali, of a little common salt, carbonated lime and alumine, and of a small quantity of a bituminous substance of a peculiar nature, combined with a part of the soda, and thus forming a kind of soap.

From the innumerable instances recorded of their power in the cure of diseases, they appear to possess alterative and detergent properties.

They have been employed with wonderful success in all gun-shot wounds, in those attended with loss of substance, or with the complication of caries and extraneous bodies; in contusions, in fistulas, schirrhuses, and cancerous affections of the womb, and every sort of ulcer, requiring digestion and suppuration; in muscular contractions, in rigid and palsied limbs,

in chronic rheumatism, in certain states of gout, in disordered menstruation, in diseases of the stomach, marked by acidity, flatulency, and heartburn; in obstinate colics, in debilities, brought on by intemperance or the abuse of mercury; in jaundice, gravel, other affections of the urinary organs; and, above all, in leprosy, in the dry red scurvy eruptions, commonly called *scorbutic,* which affect principally the hands, arms, and legs, in spots of various dimensions; and in cutaneous diseases arising from obstructed or checked *sensible* and *insensible* perspiration.

Before entering on a course of these waters, it is necessary that the invalid be perfectly recovered from the fatigues of the journey; if much excited, should lose a little blood; and if the stomach and bowels are loaded and foul, should take a gentle vomit and purgative.

The costiveness which these baths fre-

quently induce must be obviated by occasional doses of some aperient, as Epsom salts, &c.

Whenever the causes of disease are internal, the waters must constantly be drunk; and when they are thus administered, with a view to their alterative properties, their operation will then essentially be assisted by calomel, James's powders, or Plummer's pills.

The most favorable time for drinking these waters is the morning. The quantity must be regulated by the condition of the stomach, and disease of the invalid. It should not however exceed three pints, and should be for a due continuance. As it is of consequence not to load the stomach, the interval of a quarter of an hour between each draught will be proper.

The addition of milk, in the proportion

of a fourth, a third, or a half, according to circumstances, renders the waters less offensive.

In external wounds, tumours, and ulcers, the hot douches,* with some previous tepid baths, are indicated; but should these be accompanied with constitutional depravation, the internal use of the waters should also be conjoined.

The head and body should not be exposed so freely to the douches as the extremities. They are inapplicable in cases of inflammation. Fomentations of the water with temperate baths will the be more judicious remedies.

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* The *French* mean by *douche*, a fall of water directed on any part, to operate by its percussions. It is, therefore, what the *English* term *pumping*, and which is in great reputation at Bath.

The most favorable time for dressing wounds is immediately after the douche, and while in the bath-room, for the advantage of its air and warmth. The dressings should be kept constantly wet with the waters; but when the healing process has commenced, dry lint must be substituted to perfect the cure.

The douche may be employed both morning and evening, and its duration may be from ten to fifteen minutes. When the disease is so seated as not to be reached by the douche, then injections will be found convenient. For both of these applications the hottest water should generally be preferred.

When both baths and douches are required, the former should precede, to prepare the parts for the impressions of the latter, as in indurated tumours, rheumatisms, and other disorders of long standing,

caused by checked perspiration, and characterized by acridity and hardness of the skin, in obstructions of the viscera, gravel, and impeded menstruation.

The douches should always be applied near to the seat of the disease.

After its application to stiff, contracted, or hardened parts and tumours, the bituminous oil of the waters well rubbed upon them, will expedite considerably the cure.

The proper time for having the douches and baths is the interval between meals, when digestion is concluded. One hour is the ordinary duration of the temperate bath, after which and the douche the invalid should, in inveterate cases, go to bed to elicit perspiration.

The diet should be light and nutritive, consisting of soup, mutton, veal, chicken,

partridge, roasted or boiled, and the ordinary beverage, the water of the cold fountain, boiled to render it pure, should that of the mineral spring be found too disgusting for the use of the table. Those who require wine may mix a little with it.

The decided influence which the mere aqueous fluid has, by its power of dilution in the operation of mineral waters, shews the importance of this element as a medicine in chronic as well as acute diseases.

Much has been written on the aqueous regimen, and there is little doubt that many disorders have been, or may be, more or less relieved by its judicious use; for pure water is, without question, the best solvent of the food, and may therefore be esteemed the most salutary beverage for daily use.

"Water drinkers," says Dr. Saunders, "are, in general, longer livers, are less subject to decay of the faculties, and less acrid evacuations, than those who indulge in a more stimulating diluent for their common drink."*

Thus much for the medical powers of water, pure or impregnated with mineral substances, internally employed; I shall now proceed to the consideration of it as an external remedy, either general or partial, and at any temperature, from ice-cold to a degree of heat as great as the skin can bear.

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* See a Treatise on the Chemical History and Medical Powers of some of the most celebrated Mineral Waters, with Practical Remarks on the Aqueous Regimen, by W. Saunders, M.D. and Meigham on the Nature and Powers of the Baths and Waters of Bereges, 1764.

ON

BATHING IN GENERAL.

THE perpetual exhalations from the human skin, wisely provided to purify the blood, and to regulate its temperature, being composed of noxious particles,* must, when condensed upon the surface of the body, and allowed there to accumulate, be productive of foulness, the source of

* "Putrefaction which is always going on in living bodies, is corrected by food supplying new matter to their system, and by the exhalation of noxious particles from the surface: hence both animals and plants are rendered healthy by frequent washing." —*Dr. Jameson's Treatise on Cheltenham Waters, p.* 196.

many diseases; ablution, therefore, is an essential object of bathing. But this excellent quality of removing all obstructions from the cutaneous pores, and giving thereby activity to the vessels of the skin, is not the sole effect of bathing, for it has a certain influence on the animal heat, and operates powerfully on the nervous system.

Bathing is distinguished into *general* and *partial;*—*general,* when the whole body is plunged into water, or when it receives the water by means of an apparatus, causing it to descend in a shower, which is called a *shower-bath:* and *partial,* when the lower part of the body is immersed in water, denominated *hip-bath,* (semicupium,) and when the feet only are bathed, called *foot-bath,* (pediluvium)

There are numerous modes of *general bathing,* which, according to the nature of the impregnations, and degrees of

heat of the water employed, are denominated salt water, medicated, cold, cool, tepid, warm, hot, and vapour baths. The differences of temperature, however, form their most important varieties, and embrace a range from near the freezing point to a heat considerably above that of the human body.

Cold Bath.

This bath possesses the ordinary temperature of the atmosphere, from above 32 to 65 degrees of Fahrenheit's thermometer. When a healthy person is immersed in it, he first experiences a general sensation of cold, called *the shock*, and immediately afterwards an equally universal sense of warmth; but if the immersion be continued, the body by degrees becomes chilled —shiverings and drowsiness, with a disinclination to motion, supervene—the ex-

tremities grow pale and numb, and are affected with pains and cramps. The respiration is then hurried—the pulse feeble—a sense of coldness, faintness and sickness of the stomach are felt, followed by a great diminution of vital heat—the pulse gradually ceases to beat, and life is ultimately extinguished.

Should the bath be much below 60 degrees, the sensation of cold is more perceptible, a shivering is immediately experienced, and as the water rises towards the belly and chest, a shuddering, with convulsive sobbings, takes place, followed frequently by sickness and head-ache.

The glow which in healthy persons follows the cold of the first immersion is to be referred to the reaction of the system, which enables the body to resist an injurious external impression. It seems to be a peculiar effort of the living power to

which, and to the intensity of the exciting cause it is proportionate. This reaction, then, is necessary to the salutary operation of the cold bath.

It is commonly supposed that it is dangerous to go into a cold bath while the body is heated by any exertion; accordingly, it is the custom with bathers so circumstanced to wait until they are cool, before they bathe. This popular opinion and practice are, however, founded in error, and are sometimes productive of very alarming consequences. In such cases the injury is usually imputed to going into the water too warm, whereas, in truth it arises from going in too cold. "But though it be perfectly safe (as Dr. Currie has justly observed) to go into the cold bath in the earliest stage of exercise, nothing is more dangerous than this practice, after exercise has produced profuse sweating, and terminated in languor and

fatigue; because, in such circumstances, the heat is not only sinking rapidly, but the system parts more easily with the portion that remains."*

To obviate as much as possible this evil, the cold bath should be taken when the heat of the body is by some gentle exercise brought to its highest point; and the bather should undress as quickly as possible, and should wrap his body in a large flannel gown, which should not be laid aside until the very moment of entering the water. The shock of immersion will thus be diminished, and the occurrence of the salutary glow, which ought always to succeed bathing, will, in most instances, be insured.

The period proper for the bather to remain in the bath, should be regulated

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* See Dr. Currie's Medical Reports on the Effects of Water, cold and warm, as a Remedy in Fever, &c.

by his peculiar constitution and state of health. He should, however, not forget that it is safer to continue completely immersed in the water during a short time, than to take repeated plunges. After the bath, the body should immediately be dried, and covered from the air.

A notion is by some people entertained, that the morning before breakfast, is the only proper time for persons of all descriptions to bathe, to avoid the injurious effects of a full stomach at the moment of immersion. Although there can be no doubt of the impropriety of plunging into cold water, while digestion is going on, yet the propriety of bathing immediately on leaving bed in the morning is questionable.

Individuals of a feeble constitution should not take the cold bath till some hours after breakfast; when the system,

by the digestion of that meal, will have acquired some degree of strength to sustain the reaction necessary to health. The vigorous and robust need not such precautions. They may bathe early in the morning, provided they have not been intemperate the preceding night. If they have been so, the time of bathing should be deferred till noon, when they may be supposed to have recovered from the debilitating effects of their irregularity.

It was formerly the practice to bathe in the evening. Horace recommends it, in order to induce sleep. It will doubtless refresh the healthy, when fatigued; but it will equally injure the feeble, and those who indulge in the luxuries of the table.

The beneficial effects of cold-bathing may be considered to be ablution, or cleansing of the skin; the reduction of excessive heat, and a salutary reaction

of the system, upon which its tonic power depends.

By these means the irritability of the skin is lessened, and its susceptibility to slight impressions of a disagreeable nature destroyed, constituting that condition of the body denominated in common language, *hardiness*.

It is thus well calculated to brace the constitution during the middle periods of life, when the powers of the body are firmly established; provided no predisposition to visceral or cutaneous diseases exists.

After the body has, by the previous use of the warm, tepid, and cool baths, been prepared for its tonic impression, it is an excellent remedy in all cases of pure weakness of the system; but it is too powerful, not to produce much mischief,

when injudiciously used: it should, therefore, never be employed without the advice of a physician; for I have seen invalids and puny children suffer materially in their healths by its abuse.

Cold bathing is indicated, says Dr. Saunders, in all those disorders characterized by "a languor and weakness of circulation, accompanied with profuse sweating and fatigue on very moderate exertion, tremors of the limbs, and many of those symptoms usually called nervous, when the moving powers are weak, and the mind listless and indolent; but, at the same time when no permanent morbid obstruction, or visceral disease is present."*

It has been found useful in certain states of madness, in the hot stage of some

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* See Dr. Saunders' Treatise on Mineral Waters, p. 499.

fevers ;* in that irregular febrile affection, which Dr. Saunders has denominated febricula, occurring in persons naturally of a sound constitution, but who lead a sedentary life, and are engaged at the same time in some occupation requiring much exertion of mind, and causing great anxiety ; and in that species of convulsions to which children are liable. In these cases the head as well as the body should be immersed in the cold bath.

During my practice in India I employed with great success the cold affusion† during the hot stage of both the intermittent and

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* See Dr. J. Currie's Medical Reports on the Effects of Water, cold and warm, as a remedy in Fever, &c.

† This mode of applying cold water to the surface is, in some cases, more convenient and efficient than the cold Bath, and is therefore preferred by medical men, in cases of fever, &c.

remittent fever, unconnected with visceral disease, having previously cleansed the bowels by calomel and salts, and bled the patient, when signs of high arterial action were present.

In cases of convulsions Dr. Currie recommends the patient to be plunged into the cold bath at the height of the paroxysm.

As these affections in children are commonly caused by an accumulation of slimy matter in the intestines, calomel and castor oil should be premised to produce a full purgative effect.

The cold bath is inadmissible in very early infancy and in old age: the powers of life in the one state, not being sufficiently established: and, in the other, too rapidly decaying to support the shock of the sudden application of cold water.

It is injurious in all cases of internal inflammation, in scrofula, or king's evil, in chlorosis, fluor albus, and in erysipelas, or St. Anthony's fire.

Sea Bathing.

Autumn is usually selected in this country as the season most proper for this purpose, in consequence of the superior warmth of the sea at this period of the year, while the heat of the atmosphere is at the same time moderated by the cool western gales, then generally prevalent.

The sensation of cold called the shock, and that of warmth, which follows in healthy persons, constituting the glow, are equally the effects of immersion in the sea, or the simple cold bath. The rules, therefore, to be observed in the use of the one, are also applicable to the other.

The superior power of conducting heat, which water possesses over air, causes the body, while continuing in that cold medium, after the first effects of reaction already stated, to constitute the glow, to be constantly employed in producing an unusual quantity of heat to support the temperature essential to life. This appears to be a great effort in the constitution, which, if carried too far, is destructive of the animal powers. The exercise of swimming then, in such universal estimation, although requiring in itself comparatively but little muscular exertion, being performed under circumstances calculated to exhaust the animal strength, proves more fatiguing than any other kind of motion. Much caution, therefore, should be observed in the indulgence of this favourite amusement.*

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* The inhabitants of hot climates, protected by the unctuosity of their skins, from the constant use of

Many of the circumstances which precede the present mode of sea-bathing seem calculated to induce a state of the system the very reverse of what is most proper with which to enter the water. The machines too, as they are called, which are provided to convey the bathers into the sea, being exposed to all kinds of weather, are occasionally so completely pervaded by rain as to be rendered cold and dangerous; and their frequently insufficient number for their demand is too often productive of delay in bathing, and of consequent exposure to all those debilitating causes which are inimical to a healthy and vigorous reaction on plunging into the sea. The invalid should, therefore, have in readiness a dry machine, to avoid the exhalations of moisture from one that

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oil, which diminishes their permeability to heat, and favoured by the warmth of their seas and rivers, are enabled to lead almost an amphibious life.

is wet, and to prevent the abatement of spirits, which arises from disappointment in not having the means of bathing, when the mind was fully prepared for it; for these are circumstances which tend to impair the energies of life, and to diminish the benefits to be derived from sea-bathing.

Those to whom the open sea is an object of terror may substitute, with equal benefit, a bath within doors, such as most of the bathing places afford.

Much has been alleged in favour of the advantages of salt over fresh water used as a bath.* Although the saline ingredient of sea-water may have a certain action on

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* In situations distant from the coast, an artificial water, possessing all the properties of sea-water, may be made for the purpose of a bath, by dissolving a pound of bay salt in four gallons of fresh water.

irritable skins, yet there is no doubt that sea-bathing has frequently received the credit of a cure, which was entirely owing to temperature and change of air. Thus its utility in scrofula, or king's evil, and glandular swellings of the neck is extremely questionable. Dr. Hamilton in his excellent observations on these diseases, corroborates this opinion.* He says, "that during the summer months sea-bathing is constantly used, when the time of high water will admit of it, by men of all descriptions; and many boys are seldom out of the water in the day-time, except at school hours, all summer. Yet it is no less strange than true, there are no where more distressed victims to the scrofula to be met with than at Lynn! and they are as frequently to be met with

* See Observations on Scrofulous Affections, by R. Hamilton, M.D. p. 159.

among the lower orders of the inhabitants, who are used to the water daily, as in the other ranks of life, whose business has no connection with it."

The tepid salt water bath however may be an auxiliary to other remedies in these complaints.

Sea-bathing is found beneficial in renovating the constitution, when exhausted by the heat, the impure atmosphere, and enervating modes of life prevalent to great towns ;* as an auxiliary in the cure of rickets, by restoring the tone and healthy action of the organs of life, and, in the same manner, in removing nervous com-

* "Towns, being formed of stone or brick, are warmer in summer than the open country, unless the streets be so close as to intercept the free action of the sun's rays.—*Kirwan's Estimate of Temperature.*

plaints and all other maladies originating in pure debility. It is contra-indicated in all cases wherein the application of cold is injurious, as jaundice, and all those disorders called bilious; in indigestion, consumption, gout, acute rheumatism, gonorrhœa, chlorosis, and cutaneous diseases.

Shower Bath.

The cold shower bath possesses all the good qualities of cold immersion, with a less tendency to produce chilliness and cramps. It is, perhaps, the best and safest mode of cold bathing.

I have known it of infinite service in that species of head-ache, commonly called nervous, in hysterical affections, in cases of loss of muscular motion, and in habitual costiveness, from pure debility, unconnected with organic injury. It has

been prescribed with success in a peculiar sore throat, characterized by a relaxation of the uvula, and a honeycomb appearance of the glands, situated in the inside of the throat, attended with sallowness of complexion, great listlessness, and aversion to corporeal exertion, with occasional loss of voice, when occurring in the female sex, to which persons of delicate constitutions, who reside in great towns, are liable; and it has been applied to the head with benefit in insanity, while the patient's body was immersed in a warm bath. In this mode of employment, it might be of use in some cases of obstinate head-ache, and in apoplexy, after previous full depletion by bleeding and purging.

Cool Bath.

Embraces a temperature from above 65 to 85 degrees. At 75 degrees it forms an

excellent preparatory bath to the cold one, which should never be taken until the body has previously been prepared for its powerful impression, by a warm, a tepid, and a cool bath. This gradual *initiation* may, in most cases, be accomplished by a bath taken every other day from the commencement of the warm bathing to the end of two or three weeks.

Tepid Bath.

As the sensation of heat or cold varies according to the temperature of the bather's body; it is not possible to fix any exact limits to the term, tepid; it may, however, be defined to be that which gives the least possible sensation of either heat or cold to the skin, and whose operation, consequently, depends principally on the nature of its medium, and not on the circumstance of temperature. In general

it may be applied to water heated to about 92 degrees. In this temperature the healthy body can bear immersion for a considerable time without experiencing any general effect. It is, therefore, well fitted to cleanse the skin from any impurity which may adhere to it, and thus to promote its natural secretion.

The quantity of white scaly matter that may be observed floating on the surface of the bath, after its use, proves the necessity of ablution, to prevent the occurrence of those diseases arising from obstructed perspiration.

"For while the effluence of the skin maintains
Its native measure, the pleuritic spring
Glides harmless by; and Autumn, sick to death,
With sallow quartans, no contagion breathes."

ARMSTRONG.

The occasional employment of this bath,

then, is essential to the preservation of health.

In the early periods of infancy it is highly beneficial, by facilitating the developement of the corporeal organs, and by maintaining the skin in that state of softness and perspirability, which diminishes the danger of *teething*, and of the various convulsive and cutaneous diseases, to which children are liable. The practice, therefore, of plunging children indiscriminately into cold water, for the purpose of bracing their constitution, is unsafe; for in them there is a morbid disposition to visceral inflammation and congestion, which can only be prevented by a pure and healthy circulation of blood on the surface of the body.

It is a useful remedy in the hectic state of the system, whether arising from general or local irritation, in fistulous ulcer-

ations of the perineum, in fevers, and all those diseases in which the animal powers are weak, and cannot support the reaction of cold immersion. In these cases tepid affusion, when the bath would be inconvenient, will prove an efficacious substitute.

Sir A. Clarke recommends the use of the tepid bath during pregnancy, as affording great comfort and relief to the more delicate and suffering part of the creation.*

The Warm Bath.

A bath of a temperature from 92 to 98 degrees is entitled to the epithet, warm.

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* See "An Essay on Warm, Cold, and Vapour Bathing, by Sir A. Clarke, M. D.

At 95 degrees it frequently diminishes the frequency of the pulse, the animal heat, and produces the most soothing and refreshing effects.

By preventing the access of air, the proper solvent of the perspiration, it suspends the cutaneous secretion, while the pulmonary alone goes on, and thus renders the loss of weight less, than would have been sustained during an equal portion of time in the open air. It does not, therefore, relax and debilitate, but, on the contrary, invigorates the system, has a tendency to alleviate all local irritations, and to induce a state of repose peculiarly inviting to sleep.

During the periods of puberty, so critical to the female constitution, it will be found eminently serviceable in maturing the organs of the body, in establishing the balance of circulation, and in dimi-

nishing that irritability of the system, so productive of nervous disorders.

It has a salutary influence in chlorosis, in all those disorders commonly called female weakness, in gonorrhœa, gleets, in jaundice, chronic affections of the liver and spleen, atonic gout and rheumatism, and in all cases of debility arising from a long residence in a hot climate. It is a safer remedy than the cold bath, and better adapted to very weak and irritable constitutions that have not sufficient vigour of circulation to resist the overpowering shock produced by cold immersion.

The soothing and refreshing effects of the warm bath caused it to be very generally employed by the ancients to renovate exhausted nature. During the time of the Republic it was a part of the duty of the officers, called Ædiles, to enter the baths, in order to judge of and to regulate their

heat before the public in general were admitted.* The temperature, therefore, was considered of consequence. It is probable that 95 degrees was that employed.

The best time for employing the warm bath of this temperature, for the purpose of refreshing and invigorating the system, is about two hours before dinner, and the immersion may be continued for the space of fifteen or twenty minutes. During it, the body should be well rubbed with a flesh brush, to detach every kind of impurity from the skin, and to stimulate the superficial circulation. After the bath the usual dress should be worn, and gentle exercise taken.†

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* See Practical Observations concerning Sea-bathing. By P. A. Buchan, M.D. p. 191.

† The fear of taking cold after warm bathing is founded in error.

When the warm bath is heated to 98 degrees, it produces different effects, for it stimulates the circulation, accelerates the pulse, encreases the perspiration, and suspends that effort of the constitution requisite to support the animal heat, and fosters the strength of the body. It is therefore admirably fitted to retard the progress of old age, characterized by loss of irritability, suppressed perspiration, rigidity of fibre, and diminished energy in all the vital functions. The habitual use of the warm bath at this temperature ought then to be regarded as the most grateful solace of declining life. It is an excellent remedy in chronic eruptions of the skin, wherein it acts chiefly as a detergent and sudorific, and it is advantageous as an auxiliary to other remedies, in suppression or irregularity of the menstrual discharge, in swellings of the legs, to which females are liable during a residence at the sea-side, in a tonic rheu-

matism and gout, accompanied with stiffness and swellings of the joints, in slight cases of palsy, in chorea, (St. Vitus's dance,) in tetanus, (locked jaw,) in spasmodic cough, arising from obstructed perspiration, in dysentery, diarrhœa, colics, jaundice, chronic affections of the liver, suppression of urine, and other painful disorders of the urinary organs.

This bath being intended to excite perspiration, it should gradually be heated while the invalid remains immersed in it, till towards 100 degrees; and the time of immersion should not exceed fifteen minutes. The evening will be the most convenient time for it, that the invalid may go to bed immediately afterwards, to assist its operation.

The warm affusion is sometimes substituted for it, and is considered more

effectual in reducing a morbid temperature.

The powerful influence of the warm affusion on the sensorium is exemplified in the following case, related by Dr. Gregory, of Edinburgh.

" H. D. a young man in an apothecary's shop in that town, intending to take an ounce of the tincture of rhubarb, swallowed, by mistake, an ounce of laudanum. He immediately perceived his error, and took as quickly as he could three grains of tartar emetic, attempting at the same time to bring on vomiting, by irritating the internal fauces. Finding his efforts unsuccessful he took immediately six grains more; and a sudden terror seizing him, from perceiving the effects of the laudanum, he left the shop, and ran as fast as possible to the doctor's house (but a short distance) for further

assistance. The Doctor was in his study when he heard a furious ringing at the hall-door, which was instantly opened, when the young man rushed in upon him with marks of the greatest agitation; before he had time to speak vomiting came on him; and learning the circumstances of the case from the master of the shop, who followed close after, he encouraged the vomiting by warm water, and incessant irritation of the fauces. Experience had taught the Doctor that there was no safety without keeping up the vomiting for a considerable time, and it was continued for half an hour or upwards; at the end of which time the stomach became irritable, and debility and stupor increased upon him; he, however, contrived to walk home, with considerable difficulty, supported all the way, When laid upon a sofa, his eyes appeared suffused and heavy—his pulse was 95, and rather feeble—and drowsiness, notwith-

standing constant external impressions, was fast gaining ground; in this state, several gallons of *warm water* were poured on his naked body, which had the singular effect of removing entirely the drowsiness for about ten minutes, but it returned again, and he could scarcely be kept awake by constant shaking—this agitation however brought back the vomiting, and he threw up some vegetable acid, which had been given him. The *warm affusion* was repeated a second time, with the same effects as the first. The tongue soon after looked white, the skin grew hot, and the pulse rose to 105. The *warm* affusion was repeated a third and last time, immediately after which a very cold fit took place, with great tremor and faintness. He was put into a warm bed, and allowed to sleep, but the disposition to it was gone; about nine hours after the accident he was able to take sago, and fell into a sleep. In this state he continued

throughout the succeeding night, and awoke in the morning languid, but refreshed, and free from all complaint.''*

Hot Bath.

This bath possesses a temperature above 98 degrees, and communicates a striking and permanent sensation of heat.

Its powerful and extensive stimulant operation is indicated by the force and frequency of the pulse being increased, the superficial veins distended, the face flushed, the respiration rendered hurried and laborious, and the perspiration augmented by it. If the bath be heated much above this temperature, all these

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* See "An Essay on Warm, Cold, and Vapour Bathing," by Sir A. Clarke, M.D.

symptoms are aggravated, the arteries of the neck and temples throb violently, the bather grows giddy, and is ultimately carried off by apoplexy.

It is, therefore, too dangerous a remedy to be resorted to in ordinary cases of disease; and its use has accordingly been superseded by the vapour bath.

It has, notwithstanding, been found efficacious when partially applied as a hip-bath, in suppressed and irregular menstruation; and as a foot-bath in inflammatory disorders of the head and throat, by causing a determination of blood to the parts immersed.

It is in this manner that dry pumping relieves obstinate rheumatic and paralytic affections of limbs, and fomentations of the external surface, internal congestions, and inflammations.

Vapour Bath

Is simply a hot bath, employed in the form of steam, which being a weaker conductor of caloric than hot water, whilst its actual temperature is much higher, affords the means of applying this stimulus to the body with considerable intensity; and by uniting the two circumstances of heat and moisture, it speedily brings on a copious perspiration, and thus diminishes its otherwise heating effects.

It is therefore a valuable remedy, and from the comparative ease with which it might be employed, is worthy of public attention. In most of the hot natural waters on the Continent, it forms a regular part of the bathing apparatus, and is there in high estimation.

Its immediate effects are an increase of

activity in the superficial arteries, by which the determination of blood to the internal organs is lessened, and a copious flow of perspiration.

It has been prescribed with success in the cold stage of fever, in inflammation of the bowels, in bilious complaints, in obstinate cases of atonic rheumatism, gout, palsy, in glandular swellings of the neck, and in cutaneous diseases.

In these cases the vapour bath should be taken in the evening, and the invalid should go to bed immediately afterwards, to induce perspiration, which should be promoted by a liberal use of warm drinks.

Should the bath be intended to restore the balance of circulation, and to renovate the system, it should then be employed like the warm bath for the same purpose, above two hours before dinner. The body should properly be dried and rubbed after

it, and gentle exercise be taken in the open air, when its coolness will be found grateful and salutary. The perfect safety of this exposure is satisfactorily shewn by the mode of bathing universal in Russia. The inhabitants plunge at once from the vapour to the cold bath, or expose their bodies to the rigorous frost, and derive, from this sudden transition, a hardiness of constitution which enables them to endure every severity of climate, and vicissitude of weather.

The temperature of the vapour bath may be from 110 to 120 degrees, and the time for continuing in it from ten to forty minutes, according to the circumstances of the case.

Medicated Baths,

Are so called in consequence of their impregnation with some substance belonging

to the materia medica. They are numerous, of various temperatures, and have been found of great assistance in the cure of many diseases.

Nitro-Muriatic Acid Bath.

The nitro-muriatic acid, recommended by Dr. Scot, for the use of this bath, is made by mixing together equal parts of the concentrated nitric and muriatic acids.

To avoid the inconvenience arising from the fumes, which are evolved on their coming into contact, and which are extremely prejudicial to the lungs, the acids should be added separately to a quantity of water, equal in bulk to both of them, and put previously into a bottle.

As the nitro-muriatic acid acts very readily on the metals and earths, the vessels employed to contain it should be

composed either of glass or of porcelain, extremely well glazed. For the purpose of bathing, however, oblong wooden tubs answer sufficiently well.

The bath may be prepared in the following manner:—To the requisite quantity of water, heated to about 96 degrees of Fahrenheit's thermometer, add so much of this nitro-muriatic acid as will make the bath as acidulous to the tongue as weak vinegar. Should this strength be too irritating to the invalid's skin, it should then be diluted so as merely to occasion a slight sensation of pricking.

The bath may be taken daily, or more frequently, according to the exigency of the disease; and the time of immersion may be from fifteen to twenty minutes.

Its sensible effects are an occasional sense of weakness, some nervous irritation and

restlessness, a metallic taste, with pain in some part of the palate or mouth, followed by small ulcerations on its surface, and on that of the tongue, and attended by a considerable discharge of saliva.

These effects resemble those of mercury; but they may be distinguished by their being very transient, by the ulcers being confined to the cuticle, and by the total freedom of the mouth and breath from any offensive smell.

The nitro-muriatic acid appears, according to its advocates, to affect, in a particular manner, the glands, and to alter their secretions, and thus to be valuable in all disorders connected with derangements of the liver and skin. In these cases Dr. Scot remarks, "that there is no security against a relapse, till the health and strength are fully restored; and that till

then, some repetitions of the remedy are necessary."*

Simply spunging the skin with nitro-muriatic acid, sufficiently diluted with water, will produce effects similar to those of the bath; and may, therefore, in some cases, be substituted for it.

Sulphureous Baths.

These baths are also of various temperatures; the natural hot ones, such as are found at Aix-la-Chapelle, Bareges, &c. on the continent, are most valuable; for those that are cold, by being artificially heated, lose their sulphureous impregnation.

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* See Dr. Scot's paper on the Medical Use of the Nitro-Muriatic Acid, in the 8th vol. of the Medico-Chirurgical Transactions.

They are particularly efficacious in the cure of all diseases the consequence of obstructed perspiration, as cutaneous and bilious disorders. In these cases the sulphureous vapour baths will be found more efficient than the waters.

As England possesses no sulphureous thermal springs, and those on the continent are inaccessible to the mass of British subjects, in consequence of their distance, and the great expense attendant on a journey to them, it is of importance to possess the power of imitating them. With this chemistry has fortunately favoured us, and enabled us to extend, in some degree, their benefits to every climate.

The following formula for a sulphureous bath was presented to Sir A. Clarke, of Dublin, by a French physician, as the medicated bath used by Buonaparte. It possesses properties resembling that of the Source Royale at Bareges.

For every gallon of water, take
Two grains of alumine,
Two grians of carbonate of lime,
Two grains of hard Spanish soap,
Four grains of muriate of soda,
Twenty grains of dried carbonate of soda, and
Sixteen grains of the sulphuret of potash.

Grind these materials together, and boil them in as much water as will dissolve them; stir them over the fire, till the sulphurated hydrogen gas is disengaged, which is known by the smell of rotten eggs; then mix this solution with the water of the bath, previously heated to 96 degrees.

Such are the medical powers of the various modes of bathing. From a review of their comparative excellences I cannot but regret that the warm and vapour baths are so little used in this country, and that

the erection of public baths, for the use of the people, has not yet been considered of adequate national importance to attract the attention of the British Government. In the words of Dr. Clarke, "I hardly know any act of benevolence more essential to the comfort of the community than that of establishing, by public benefaction, the use of baths for the poor, in all our cities and manufacturing towns. The lives of many might be saved by them. in England they are considered only as articles of luxury; yet throughout the vast empire of Russia, through Finland, Lapland, Sweden, and Norway, there is no cottage so poor, no hut so destitute, but it possesses its vapour bath; in which all its inhabitants, every Saturday at least, and every day, in cases of sickness, experience comfort and salubrity. Lady Mary Wortley Montague, in spite of all the prejudices which prevailed in England against inoculation, introduced it from Turkey. If another person, of equal influence,

would endeavour to establish, througout Great Britain, the use of warm and vapour baths, the inconveniences of our climate would be done away. Perhaps at some future period they may become general; and statues may perpetuate the memory of the patriot, the statesman, or the sovereign, to whom society will be indebted for their institution."*

The necessity of the due performance of the functions of the alimentary canal, to ensure the beneficial effects of all the mineral waters, or of any mode of bathing, renders the knowledge how to regulate the alvine evacuations, essential to those who either wish to preserve health, or to

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* See Travels in various Countries of Europe, Asia, and Africa, by E. D. Clarke, LL. D. part I. chap. VIII. p. 147.

recover it when lost. One or two motions, then, of a form too well known to require description, of a yellow colour, and of a certain odour, should daily be procured; and for this purpose, it may generally be considered, that during a course of the diluent, diuretic, stimulant, and tonic waters, and of the various baths for the purpose of strengthening the system, the saline or vegetable purgatives are proper; but during that of the alterative and detergent waters, particularly when employed to remove bilious and cutaneous diseases, and of the warm and vapour baths, when resorted to for the same object, either the blue pill, Ethiop's mineral or calomel, with antimony, should form a part of the method of treatment, in addition to occasional doses of any convenient aperient.

The prejudices against purgatives entertained by some people from a notion of their weakening tendency, has, by in-

ducing frequently a neglect of the state of the bowels, been the cause of general derangement of the system. There is no doubt that their abuse, as well as that of every other medicine, is prejudicial; but it is equally true that a discriminate and judicious use of them is productive of infinite benefit to the constitution. To their utility in the treatment of disease, I can, without hesitation, bear testimony, having, during a practice of ten years, in different climates, been often indebted to them for many cures, without the occurrence of a single occasion to regret their administration.

Whatever may be the remedy, it must not be forgotten, that a strict observance of a judicious regimen, of daily exercise in the open air, and of regular habits of life, will greatly assist in the re-establishment of health.

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